

CLAIMS

1. A recording method for recording information on a recording medium under one recording condition of a plurality of recording conditions, the recording method comprising the steps of:

(a) recording a plurality of test information on the recording medium under the plurality of recording conditions; and

(b) recording the information on the recording medium under one recording condition of the plurality of recording conditions,

wherein the step (b) includes the steps of:

(b-1) calculating differences between each of a plurality of test signals obtained by reproducing the plurality of test information recorded on the recording medium and at least one desired signal; and

(b-2) selecting one recording condition of the plurality of recording conditions by referring to the calculated differences.

2. A recording method according to claim 1, wherein:

the step (a) includes the steps of:

(a-1) determining an initial condition; and
(a-2) determining at least one recording condition based on the initial condition, and

the plurality of recording conditions include the initial condition and the determined at least one recording condition.

3. A recording method according to claim 1, wherein:

the step (b-1) includes the steps of:

obtaining the plurality of test signals by re-

producing the plurality of test information from the recording medium;

performing a maximum likelihood decoding on the plurality of test signals to generate a plurality of two-valued signals indicating a result of the maximum likelihood decoding; and

calculating a reliability of the result of the maximum likelihood decoding based on the plurality of test signals and the plurality of two-valued signals, and
the step (b-2) includes the step of:
selecting one recording condition of the plurality of recording conditions based on a plurality of values indicating the reliability.

4. A recording method according to claim 3, wherein:
the step (b-2) includes the step of:
selecting a recording condition corresponding to a smallest value of the plurality of values indicating the reliability, among the plurality of recording conditions.

5. A recording method according to claim 1, wherein:
the step (b-1) includes the steps of:
obtaining the plurality of test signals by reproducing the plurality of test information from the recording medium;

generating a plurality of paths based on each of the plurality of test signals; and
calculating a plurality of indexes indicating a reliability of the plurality of test signals based on each of the plurality of test signals and the plurality of paths, and

the step (b-2) includes the step of:
selecting one recording condition of the plurality

of recording conditions based on the plurality of indexes.

6. A recording method according to claim 5, wherein:

the step (b-2) includes the step of:

5 selecting a recording condition corresponding to a
smallest value of the plurality of the indexes, among the
plurality of recording conditions.

7. A recording method according to claim 1, wherein:

10 a priority order for being selected is given to the
plurality of recording conditions.

8. A recording method according to claim 1, wherein:

the step (b) includes the steps of:

15 determining relative positions of a plurality of
light pulses included in a light beam in accordance with
the selected one recording condition; and

 forming a plurality of recording marks having
predetermined lengths on the recording medium by irradiating
20 the recording medium with the light beam.

9. A recording method according to claim 8, wherein:

the plurality of recording marks having the
predetermined lengths include a shortest recording mark.

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10. A recording method according to claim 8, wherein:

the plurality of recording marks having the
predetermined lengths include a recording mark which is the
second shortest.

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11. A recording method according to claim 2, wherein:

the initial condition is recorded on the recording
medium when the recording medium is manufactured.

12. A recording method according to claim 2, further comprising the step of:

5 determining a predetermined recording condition based on at least one of an edge shift amount and a jitter, wherein the predetermined recording condition is included in the plurality of recording conditions.

13. A recording method according to claim 12, wherein:

10 the step (a-1) includes the step of:

 determining the predetermined recording condition as the initial condition.

14. A recording apparatus for recording information on a recording medium under one recording condition of a plurality of recording conditions, the recording apparatus comprising:

 a first recording means for recording a plurality of test information on the recording medium under the plurality of recording conditions; and

20 a second recording means for recording the information on the recording medium under one recording condition of the plurality of recording conditions,

 wherein the second recording means includes:

25 a calculating unit operable to calculate differences between each of a plurality of test signals obtained by reproducing the plurality of test information recorded on the recording medium and at least one desired signal; and

30 a selecting unit operable to select one recording condition of the plurality of recording conditions by referring to the calculated differences.

15. A program for having a computer execute a recording process for recording information on a recording medium under

one recording condition of a plurality of recording conditions,

wherein the recording process comprises the steps of:

5 (a) recording a plurality of test information on the recording medium under the plurality of recording conditions; and

(b) recording the information on the recording medium under one recording condition of the plurality of recording conditions, and
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the step (b) includes the steps of:

(b-1) calculating differences between each of a plurality of test signals obtained by reproducing the plurality of test information recorded on the recording medium and at least one desired signal; and
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(b-2) selecting one recording condition of the plurality of recording conditions by referring to the calculated differences.

20 16. A recording control apparatus for recording information on a recording medium under one recording condition of a plurality of recording conditions, comprising:

a calculating unit operable to calculate differences between each of a plurality of test signals obtained by reproducing a plurality of test information recorded on the recording medium and at least one desired signal; and
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a selecting unit operable to select one recording condition of the plurality of recording conditions by referring to the calculated differences.